APPENDIX A

DRAINWATER REDUCTION OPTIMIZATION AND DRAINAGE QUANTITY

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Table A-1

FINANCIAL & ECONOMIC ANALYSIS OF DRAINWATER REDUCTION OPTIONS

Alternative	Area Drained (Acres)	Reduced Drainage (AF/year)	Salt Removed	Construction & Periodic Replacement Costs ($1,000)	Annual OM&R Costs ($1,000)	Annual Energy Costs ($1,000)	Discounted Value of Construction, IDC, & Periodic Replacement Costs ($1,000)	Discounted Value of Annual OM&R Costs ($1,000)	Discounted Value of Annual Energy Costs ($1,000)	Discounted Value of Total Alternative Costs ($1,000)	Annual Equivalent Cost ($1,000)	Annual Cost per Acre ($)	Annual Cost per Acre-Foot ($)
1 Drainwater Recycling	254,000	24,800	0	$49,602	$990	$0	$51,121	$11,523	$0	$62,644	$4,044	$15.92	$163.06
2 Shallow Groundwater Management	254,000	5,100	0	$0	$951	$0	$0	$16,012	$0	$16,012	$1,034	$4.07	$202.68
3 Seepage Reduction	254,000	4,200	0	$7,998	($9)	$0	$8,243	($105)	$0	$8,138	$525	$2.07	$125.08
4 Groundwater Pumping	254,000	5,400	0	$13,998	$1,301	$524	$14,427	$15,142	$6,099	$35,668	$2,303	$9.07	$426.39
5 Irrigation System Improvements	254,000	24,500	0	$0	$27,185	$0	$0	$290,990	$0	$290,990	$18,785	$73.96	$766.72
6 Annual Fallowing	254,000	20,000	0	$0	$7,620	$0	$0	$128,299	$0	$128,299	$8,282	$32.61	$414.11
7a Partial Regional Drainwater Reuse	254,000	54,000	0	$80,110	$3,600	$0	$29,775	$20,084	$0	$49,859	$3,219	$12.67	$59.60
7b Full Regional Drainwater Reuse	254,000	99,060	0	$146,957	$6,604	$0	$54,621	$36,843	$0	$91,463	$5,904	$22.76	$58.36

Table A-2

DRAINAGE FLOWS FOR DRAINWATER REDUCTION OPTIONS

	Reduced Drainage (AF/year)	Influent Reuse (AF/year)	Area Required for Reuse Facility (Acres)	Iteration # 1Influent Reuse (AF/year)	Iteration # 1 Area Required for Reuse Facility (Acres)	Iteration # 2 Influent Reuse (AF/year)	Iteration # 2 Area Required for Reuse Facility (Acres)	Iteration # 3 Influent Reuse (AF/year)	Iteration # 3 Area Required for Reuse Facility (Acres)	Iteration # 4 Influent Reuse (AF/year)	Iteration # 4 Area Required for Reuse Facility (Acres)	Drainage Reduced Reuse (AF/year)	Total Drainage Reduced (AF/year)	Disposal Flow (AF/Year)	Annual Equivalent Cost Reuse + Drainwater Reduction ($1,000)	**Design Flow (cfs)**
No Reuse, no Drainwater Reduction	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0	0	147,800	0	**204**
Full Reuse	0	147,800	36,950	134,895	33,724	136,022	34,006	135,924	33,981	135,932	33,983	99,231	99,231	36,702	$5,914	**51**
Reuse + 1	24,800	123,000	30,750	112,261	28,065	113,198	28,300	113,117	28,279	113,124	28,281	82,580	107,380	30,543	$8,966	**42**
Reuse +1 + 2	29,900	117,900	29,475	107,606	26,902	108,505	27,126	108,426	27,107	108,433	27,108	79,156	109,056	29,277	$9,796	**40**
Reuse +1 + 3	29,000	118,800	29,700	108,427	27,107	109,333	27,333	109,254	27,314	109,261	27,315	79,760	108,760	29,500	$9,323	**41**
Reuse +1 + 2 + 3	34,100	113,700	28,425	103,773	25,943	104,639	26,160	104,564	26,141	104,570	26,143	76,336	110,436	28,234	$10,153	**39**
Reuse +1 + 2 + 3 + 4	39,500	108,300	27,075	98,844	24,711	99,670	24,917	99,598	24,899	99,604	24,901	72,711	112,211	26,893	$12,239	**37**
Reuse +1 + 2 + 3 + 4 + 5	64,000	83,800	20,950	76,483	19,121	77,122	19,281	77,066	19,267	77,071	19,268	56,262	120,262	20,809	$30,043	**29**
Reuse +1 + 2 + 3 + 4 + 5 + 6	84,000	63,800	15,950	58,230	14,557	58,716	14,679	58,673	14,668	58,677	14,669	42,834	126,834	15,843	$37,525	**22**
Reuse +1 + 2 + 3 + 4 + 6	59,500	88,300	22,075	80,590	20,148	81,264	20,316	81,205	20,301	81,210	20,302	59,283	118,783	21,927	$19,721	**30**

Table A-3
DRAINWATER REDUCTION OPTIMIZATION FOR OCEAN DISPOSAL

Scenario		Design Flow (cfs)	Annual Flow (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Conveyance Cost[1] ($1,000)	Total Annual Equivalent Cost ($1,000)	Percentage Cost Over Minimum Cost (%)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse) ($)	Cost per Total Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse) ($)
A	No Drainwater Reduction, no reuse	204	147,800	$0	$52,453	$52,453	67.37	$71.85	$71.85	$206.51	$206.51
B	Full Reuse	51	36,702	$5,914	$25,649	$31,563	0.71	$43.24	$45.35	$124.26	$143.46
C	Reuse +1	42	30,543	$8,966	$22,543	$31,509	0.54	$43.16	$44.90	$124.05	$139.59
D	Reuse +1+2	40	29,277	$9,796	$21,904	$31,700	1.15	$43.42	$45.10	$124.80	$139.71
E	Reuse +1+3	41	29,500	$9,323	$22,017	$31,340	0.00	$42.93	$44.60	$123.39	$138.25
F	Reuse +1+2+3	39	28,234	$10,153	$21,378	$31,531	0.61	$43.19	$44.80	$124.14	$138.38
G	Reuse +1+2+3+4	37	26,893	$12,239	$20,702	$32,941	5.11	$45.13	$46.72	$129.69	$143.79
H	Reuse +1+2+3+4+5	29	20,809	$30,043	$17,634	$47,677	52.13	$65.31	$67.08	$187.71	$203.11
I	Reuse +1+2+3+4+5+6	22	15,843	$37,525	$15,130	$52,655	68.01	$72.13	$73.61	$207.30	$220.01
J	Reuse +1+2+3+4+6	30	21,927	$19,721	$18,198	$37,919	20.99	$51.94	$53.43	$149.29	$162.26

[1] Costs for 204 cfs were estimated from annual costs at 300 and 100 cfs. A factor of [(51.82-31.48)/(144800-48,300)]=211 was applied to all disposal flows.
All other costs were estimated from annual costs at 100 and 0 cfs. A factor of [(31.48-7.14)/48,300]=504 was applied to all disposal flows.

LEGEND
1 Drainwater Recycling
2 Shallow Groundwater Management
3 Seepage Reduction
4 Groundwater Pumping
5 Irrigation System Improvements
6 Annual Fallowing

Other Data

254000	Drained Acres	Slope 100	Slope 300
730,000	Irrigated Acres	504	211
		48,265	144,796

Shading reflects most cost-effective measures.

Table A-4a
DRAINWATER REDUCTION OPTIMIZATION FOR CHIPPS/DELTA DISPOSAL WITH LAGOON TREATMENT

Scenario		Design Flow (cfs)	Annual Flow (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Conveyance Cost[1] ($1,000)	Annual Equivalent Drainwater Reduction Conveyance Cost ($1,000)	Lagoon Selenium Treatment Costs ($1,000)	Lagoon Selenium Treatment Area (Acres)	Annual Equivalent Total Cost w/ Treatment ($1,000)	Percentage Cost Over Minimum Cost (%)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse and Se treatment) ($)	Cost per Total Drn Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse and Se treatment) ($)
A	No drainwater reduction, no reuse 2(	204	147,800	$0	$35,623	$35,623	$44,996	725	$80,619	141.60	$110.44	$110.55	$317.40	$318.31
B	Full Reuse	51	36,702	$5,914	$17,963	$23,878	$11,528	197	$35,406	6.10	$48.50	$50.88	$139.39	$161.07
C	Reuse +1	42	30,543	$8,966	$15,323	$24,289	$9,553	166	$33,842	1.42	$46.36	$48.24	$133.24	$150.04
D	Reuse +1+2	40	29,277	$9,796	$14,780	$24,576	$9,106	159	$33,682	0.94	$46.14	$47.93	$132.61	$148.55
E	Reuse +1+3	41	29,500	$9,323	$14,876	$24,199	$9,330	163	$33,529	0.48	$45.93	$47.73	$132.00	$148.02
F	Reuse +1+2+3	39	28,234	$10,153	$14,333	$24,486	$8,883	156	$33,369	0.00	$45.71	$47.42	$131.37	$146.55
G	Reuse +1+2+3+4	37	26,893	$12,239	$13,758	$25,998	$8,437	149	$34,434	3.19	$47.17	$48.85	$135.57	$150.40
H	Reuse +1+2+3+4+5	29	20,809	$30,043	$11,150	$41,194	$6,651	122	$47,845	43.38	$65.54	$67.33	$188.37	$203.93
I	Reuse +1+2+3+4+5+6	22	15,843	$37,525	$9,021	$46,547	$5,069	90	$51,616	54.68	$70.71	$72.17	$203.21	$215.75
J	Reuse +1+2+3+4+6	30	21,927	$19,721	$11,629	$31,351	$6,874	125	$38,225	14.55	$52.36	$53.87	$150.49	$163.65

[1] Costs for 204 cfs were estimated from annual costs at 300 and 100 cfs. A factor of [(35.24-22.92)/(144,800-48,300)]=128 was applied to all disposal flows.
All other costs were estimated from annual costs at 100 and 0 cfs. A factor of [(22.92-2.23)/48,300]= 429 was applied to all disposal flows.

LEGEND
1 Drainwater Recycling
2 Shallow Groundwater Management
3 Seepage Reduction
4 Groundwater Pumping
5 Irrigation System Improvements
6 Annual Fallowing

Other Data

254000	Drained Acres	Slope 100	Slope 300
730000	Irrigated Acres	429	128
		48,265	144,796

Shading reflects most cost-effective measures.

Table A-4b
DRAINWATER REDUCTION OPTIMIZATION FOR CHIPPS/DELTA DISPOSAL WITH HIGH RATE TREATMENT

Scenario		Design Flow (cfs)	Annual Flow (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Conveyance Cost[1] ($1,000)	Annual Equivalent Drainwater Reduction Conveyance Cost ($1,000)	High Rate Selenium Treatment Costs ($1,000)	High Rate Selenium Treatment Area (Acres)	Annual Equivalent Total Cost w/ Treatment ($1,000)	Percentage Cost Over Minimum Cost (%)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse and Se treatment) ($)	Cost per Total Drn Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse and Se treatment) ($)
A	No drainwater reduction, no reuse 20	204	147,800	$0	$35,623	$35,623	na	na	na	na	na	na	na	na
B	Full Reuse	51	36,702	$5,914	$17,963	$23,878	$16,723	5	$40,601	7.36	$55.62	$58.33	$159.85	$184.54
C	Reuse +1	42	30,543	$8,966	$15,323	$24,289	$14,187	5	$38,476	1.74	$52.71	$54.83	$151.48	$170.46
D	Reuse +1+2	40	29,277	$9,796	$14,780	$24,576	$13,618	5	$38,194	0.99	$52.32	$54.34	$150.37	$168.34
E	Reuse +1+3	41	29,500	$9,323	$14,876	$24,199	$13,903	5	$38,102	0.75	$52.19	$54.22	$150.01	$168.09
F	Reuse +1+2+3	39	28,234	$10,153	$14,333	$24,486	$13,333	5	$37,819	0.00	$51.81	$53.73	$148.89	$165.98
G	Reuse +1+2+3+4	37	26,893	$12,239	$13,758	$25,998	$12,761	5	$38,759	2.48	$53.09	$54.97	$152.59	$169.18
H	Reuse +1+2+3+4+5	29	20,809	$30,043	$11,150	$41,194	$10,447	4	$51,641	36.55	$70.74	$72.66	$203.31	$220.00
I	Reuse +1+2+3+4+5+6	22	15,843	$37,525	$9,021	$46,547	$8,372	4	$54,918	45.21	$75.23	$76.77	$216.21	$229.47
J	Reuse +1+2+3+4+6	30	21,927	$19,721	$11,629	$31,351	$10,739	4	$42,089	11.29	$57.66	$59.31	$165.71	$180.10

[1] Costs for 204 cfs were estimated from annual costs at 300 and 100 cfs. A factor of [(35.24-22.92)/(144,800-48,300)]=128 was applied to all disposal flows.
All other costs were estimated from annual costs at 100 and 0 cfs. A factor of [(22.92-2.23)/48,300]= 429 was applied to all disposal flows.

LEGEND
1 Drainwater Recycling
2 Shallow Groundwater Management
3 Seepage Reduction
4 Groundwater Pumping
5 Irrigation System Improvements
6 Annual Fallowing

Other Data

	Drained Acres	Slope 100	Slope 300
254000	Irrigated Acres	429	128
730000		48,265	144,796

Shading reflects most cost-effective measures.

Table A-5a
DRAINWATER REDUCTION OPTIMIZATION FOR CARQUINEZ/DELTA DISPOSAL WITH LAGOON TREATMENT

Scenario		Design Flow (cfs)	Annual Flow (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Conveyance Cost[1] ($1,000)	Annual Equivalent Drainwater Reduction Conveyance Cost ($1,000)	Lagoon Selenium Treatment Costs ($1,000)	Lagoon Selenium Treatment Area (Acres)	Annual Equivalent Total Cost w/ Treatment ($1,000)	Percentage Cost Over Minimum Cost (%)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse and Se treatment) ($)	Cost per Total Drn Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse and Se treatment) ($)
A	No drainwater reduction, no reuse 20	204	147,800	$0	$81,644	$81,644	$44,996	725	$126,640	na	$173.48	$173.65	$498.58	$500.01
B	Full Reuse	51	36,702	$5,914	$32,289	$38,204	$11,528	197	$49,732	12.03	$68.13	$71.47	$195.80	$226.24
C	Reuse +1	42	30,543	$8,966	$27,246	$36,212	$9,553	166	$45,764	3.10	$62.69	$65.23	$180.17	$202.90
D	Reuse +1+2	40	29,277	$9,796	$26,208	$36,004	$9,106	159	$45,110	1.62	$61.79	$64.19	$177.60	$198.96
E	Reuse +1+3	41	29,500	$9,323	$26,391	$35,715	$9,330	163	$45,044	1.47	$61.70	$64.12	$177.34	$198.85
F	Reuse +1+2+3	39	28,234	$10,153	$25,354	$35,507	$8,883	156	$44,390	0.00	$60.81	$63.08	$174.76	$194.95
G	Reuse +1+2+3+4	37	26,893	$12,239	$24,256	$36,495	$8,437	149	$44,932	1.22	$61.55	$63.74	$176.90	$196.25
H	Reuse +1+2+3+4+5	29	20,809	$30,043	$19,273	$49,317	$6,651	122	$55,968	26.08	$76.67	$78.76	$220.35	$238.56
I	Reuse +1+2+3+4+5+6	22	15,843	$37,525	$15,206	$52,731	$5,069	90	$57,800	30.21	$79.18	$80.81	$227.56	$241.60
J	Reuse +1+2+3+4+6	30	21,927	$19,721	$20,188	$39,909	$6,874	125	$46,784	5.39	$64.09	$65.93	$184.19	$200.30

[1] Costs for 204 cfs were estimated from annual costs at 300 and 100 cfs. A factor of [(80.44-41.76)/(144,800-48,300)]=401 was applied to all disposal flows.
All other costs were estimated from annual costs at 100 and 0 cfs. A factor of [(41.76-2.23)/48,300]=819 was applied to all disposal flows.

LEGEND
1 Drainwater Recycling
2 Shallow Groundwater Management
3 Seepage Reduction
4 Groundwater Pumping
5 Irrigation System Improvements
6 Annual Fallowing

Other Data		Slope 100	Slope 300
254000	Drained Acres	819	401
730000	Irrigated Acres	48,265	144,796

Shading refelcts most cost-effective measures.

Table A-5b
DRAINWATER REDUCTION OPTIMIZATION FOR CARQUINEZ/DELTA DISPOSAL WITH HIGH RATE TREATMENT

Scenario		Design Flow (cfs)	Annual Flow (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Conveyance Cost[1] ($1,000)	Annual Equivalent Drainwater Reduction Conveyance Cost ($1,000)	High Rate Selenium Treatment Costs ($1,000)	High Rate Selenium Treatment Area (Acres)	Annual Equivalent Total Cost w/ Treatment ($1,000)	Percentage Cost Over Minimum Cost (%)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse and Se treatment) ($)	Cost per Total Drn Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse and Se treatment) ($)
A	No drainwater reduction, no reuse 204	204	147,800	$0	$81,644	$81,644	na	na	na	na	na	na	na	na
B	Full Reuse	51	36,702	$5,914	$32,289	$38,204	$16,723	5	$54,927	12.46	$75.24	$78.92	$216.25	$249.66
C	Reuse +1	42	30,543	$8,966	$27,246	$36,212	$14,187	5	$50,399	3.19	$69.04	$71.82	$198.42	$223.29
D	Reuse +1+2	40	29,277	$9,796	$26,208	$36,004	$13,618	5	$49,622	1.60	$67.98	$70.60	$195.36	$218.71
E	Reuse +1+3	41	29,500	$9,323	$26,391	$35,715	$13,903	5	$49,618	1.59	$67.97	$70.61	$195.34	$218.89
F	Reuse +1+2+3	39	28,234	$10,153	$25,354	$35,507	$13,333	5	$48,840	0.00	$66.90	$69.39	$192.28	$214.35
G	Reuse +1+2+3+4	37	26,893	$12,239	$24,256	$36,495	$12,761	5	$49,256	0.85	$67.47	$69.86	$193.92	$215.00
H	Reuse +1+2+3+4+5	29	20,809	$30,043	$19,273	$49,317	$10,447	4	$59,763	22.37	$81.87	$84.09	$235.29	$254.61
I	Reuse +1+2+3+4+5+6	22	15,843	$37,525	$15,206	$52,731	$8,372	4	$61,102	25.11	$83.70	$85.42	$240.56	$255.31
J	Reuse +1+2+3+4+6	30	21,927	$19,721	$20,188	$39,909	$10,739	4	$50,648	3.70	$69.38	$71.37	$199.40	$216.73

[1] Costs for 204 cfs were estimated from annual costs at 300 and 100 cfs. A factor of [(80.44-41.76)/(144,800-48,300)]=401 was applied to all disposal flows.
All other costs were estimated from annual costs at 100 and 0 cfs. A factor of [(41.76-2.23)/48,300]=819 was applied to all disposal flows.
[2] Treatment costs provided by B&V

LEGEND
1 Drainwater Recycling
2 Shallow Groundwater Management
3 Seepage Reduction
4 Groundwater Pumping
5 Irrigation System Improvements
6 Annual Fallowing

Other Data		Slope 100	Slope 300
254000	Drained Acres	819	401
730000	Irrigated Acres	48,265	144,796

Shading reflects most cost-effective measures.

Table A-6a
DRAINWATER REDUCTION OPTIMIZATION FOR IN-VALLEY DISPOSAL WITH LAGOON TREATMENT

Scenario		Design Flow (cfs)	Annual Disposal Flow (AF/year)	Influent to Reuse WWD (AF/year)	Influent to Reuse Nly Districts (AF/year)	Influent to RO (AF/year)	Influent to Se treatment (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Capital +OM Costs ($1,000)	Annual Equivalent Total Cost w/ Reuse & SC ($1,000)	Percentage Cost Over Minimum Cost (%)	Biological Selenium Treatment Area (Acres)	Evaporation Ponds Area (Acres)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse, Se treatment, evap ponds) ($)	Cost per Total Drn Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse, Se treatment, and evap ponds) ($)
A	No drainwater reduction, no reuse	204	147,800	0	0	47,800	123,900	$0	$85,211	$85,211	na	725	26,084	$116.73	$121.18	$335.48	$375.06
B	Full Reuse	51	36,702	88,132	47,800	12,906	30,249	$5,914	$20,949	$26,864	2.08	197	6,368	$36.80	$38.96	$105.76	$125.86
C	Reuse +1	42	30,543	73,324	39,800	10,746	25,170	$8,966	$17,433	$26,399	0.31	166	5,299	$36.16	$37.92	$103.93	$119.86
D	Reuse +1+2	40	29,277	69,033	39,400	10,638	23,958	$9,796	$16,642	$26,437	0.46	159	5,044	$36.22	$37.89	$104.08	$119.25
E	Reuse +1+3	41	29,500	73,661	35,600	9,612	24,694	$9,323	$16,993	$26,317	0.00	163	5,199	$36.05	$37.74	$103.61	$118.91
F	Reuse +1+2+3	39	28,234	69,370	35,200	9,504	23,482	$10,153	$16,202	$26,355	0.15	156	4,944	$36.10	$37.72	$103.76	$118.31
G	Reuse +1+2+3+4	37	26,893	65,404	34,200	9,234	22,276	$12,239	$15,396	$27,635	5.01	149	4,690	$37.86	$39.46	$108.80	$123.23
H	Reuse +1+2+3+4+5	29	20,809	52,771	24,300	6,561	17,529	$30,043	$12,031	$42,075	59.88	122	3,690	$57.64	$59.52	$165.65	$182.20
I	Reuse +1+2+3+4+5+6	22	15,843	39,277	19,400	5,238	13,224	$37,525	$9,111	$46,636	77.21	90	2,784	$63.88	$65.46	$183.61	$197.23
J	Reuse +1+2+3+4+6	30	21,927	51,910	29,300	7,911	17,971	$19,721	$12,475	$32,196	22.34	125	3,783	$44.10	$45.62	$126.76	$140.11

	LEGEND	Grasslands
1	Drainwater Recycling	8000
2	Shallow Groundwater Management	400
3	Seepage Reduction	4200
4	Groundwater Pumping	1000
5	Irrigation System Improvements	9900
6	Annual Fallowing	4900

Other Data

254000	Drained Acres
730000	Irrigated Acres

Shading reflects most cost-effective measures.

Table A-6b
DRAINWATER REDUCTION OPTIMIZATION FOR IIN-VALLEY DISPOSAL WITH HIGH RATE TREATMENT

Scenario		Design Flow (cfs)	Annual Disposal Flow (AF/year)	Influent to Reuse WWD (AF/year)	Influent to Reuse Nly Districts (AF/year)	Influent to RO (AF/year)	Influent to Se treatment (AF/year)	Annual Equivalent Cost Drainwater Reduction ($1,000)	Annual Equivalent Capital +OM Costs ($1,000)	Annual Equivalent Total Cost w/ Reuse & SC ($1,000)	Percentage Cost Over Minimum Cost (%)	High Rate Selenium Treatment Area (Acres)	Evaporation Ponds Area (Acres)	Cost per Total Ir Ac (730,000) ($)	Cost per Ir Ac (730,000 - land retired for reuse, Se treatment, evap ponds) ($)	Cost per Total Drn Ac (254,000) ($)	Cost per DrnAc (254,000 - land retired for reuse, Se treatment, and evap ponds) ($)
A	No drainwater reduction, no reuse	204	147,800	0	0	47,800	123,900	$0	na	na	na	na	na	na	na	na	na
B	Full Reuse	51	36,702	88,132	47,800	12,906	30,249	$5,914	$25,847	$31,761	5.32	5	6,368	$43.51	$46.05	$125.04	$148.66
C	Reuse +1	42	30,543	73,324	39,800	10,746	25,170	$8,966	$21,508	$30,474	1.05	5	5,299	$41.75	$43.76	$119.98	$138.26
D	Reuse +1+2	40	29,277	69,033	39,400	10,638	23,958	$9,796	$20,521	$30,316	0.53	5	5,044	$41.53	$43.44	$119.36	$136.66
E	Reuse +1+3	41	29,500	73,661	35,600	9,612	24,694	$9,323	$20,991	$30,315	0.52	5	5,199	$41.53	$43.46	$119.35	$136.87
F	Reuse +1+2+3	39	28,234	69,370	35,200	9,504	23,482	$10,153	$20,004	$30,157	0.00	5	4,944	$41.31	$43.15	$118.73	$135.29
G	Reuse +1+2+3+4	37	26,893	65,404	34,200	9,234	22,276	$12,239	$19,002	$31,242	3.60	5	4,690	$42.80	$44.61	$123.00	$139.22
H	Reuse +1+2+3+4+5	29	20,809	52,771	24,300	6,561	17,529	$30,043	$14,869	$44,913	48.93	4	3,690	$61.52	$63.52	$176.82	$194.40
I	Reuse +1+2+3+4+5+6	22	15,843	39,277	19,400	5,238	13,224	$37,525	$11,252	$48,777	61.74	4	2,784	$66.82	$68.45	$192.04	$206.21
J	Reuse +1+2+3+4+6	30	21,927	51,910	29,300	7,911	17,971	$19,721	$15,385	$35,106	16.41	4	3,783	$48.09	$49.73	$138.21	$152.69

	LEGEND	Grasslands
1	Drainwater Recycling	8000
2	Shallow Groundwater Management	400
3	Seepage Reduction	4200
4	Groundwater Pumping	1000
5	Irrigation System Improvements	9900
6	Annual Fallowing	4900

Other Data

254000	Drained Acres
730000	Irrigated Acres

Shading reflects most cost-effective measures.

Table A-7b
In-Valley Flow

	Iterations	Northerly Area	Westlands North	Westlands Central	Westlands South	Total
	Iteration 1					
1	Flow Influent to Reuse (AF/year)	35,200	27,300	27,200	24,000	113,700
	Area Required for Reuse Facility (acres)	8,800	6,825	6,800	6,000	28,425
	Area Required Evaporation Ponds (acres)		2777	775	939	4,490
	Area Required for Mitigation (acres)		3443	1159		4,602
	67 percent of Reuse Area (acres)		4,573	4,556	4,020	13,149
	67 percent Evaporation Ponds (acres)		1,860	519	629	3,009
	67 percent Mitigation Areas (acres)		2,307	776	0	3,083
	Adjusted Drained Area (acres)	54,000	59,260	62,148	63,351	238,759
	Iteration 2					
2	Flow Influent to Reuse (acres)	35,200	23,791	24,149	24,523	107,663
	Area Required for Reuse Facility (acres)	8,800	5,948	6,037	6,131	26,916
	Area Required Evaporation Ponds (acres)		2677	737	892	4,306
	Area Required for Mitigation (acres)		3319	1117		4,437
	67 percent of Reuse Area (acres)		3,985	4,045	4,108	12,138
	67 percent Evaporation Ponds (acres)		1,794	494	598	2,885
	67 percent Mitigation Areas (acres)		2,224	748	0	2,972
	Adjusted Drained Acres (acres)	54,000	59,997	64,713	57,295	236,005
	Iteration 3					
3	Flow Influent to Reuse (acres)	35,200	24,087	25,146	22,179	106,611
	Area Required for Reuse Facility (acres)	8,800	6,022	6,286	5,545	26,653
	Area Required Evaporation Ponds (acres)		2685	716	868	4,269
	Area Required for Mitigation (acres)		3330	1121		4,450
	67 percent of Reuse Area (acres)		4,035	4,212	3,715	11,961
	67 percent Evaporation Ponds (acres)		1,799	480	581	2,861
	67 percent Mitigation Areas (acres)		2,231	751	0	2,982
	Adjusted Drained Acres (acres)	54,000	59,935	64,557	57,704	236,196
	Iteration 4					
4	Flow Influent to Reuse (acres)	35,200	24,062	25,085	22,337	106,684
	Area Required for Reuse Facility (acres)	8,800	6,016	6,271	5,584	26,671
	Area Required Evaporation Ponds (acres)		2685	718	869	4,272
	Area Required for Mitigation (acres)		3329	1120		4,449
	67 percent of Reuse Area (acres)		4,030	4,202	3,741	11,974
	67 percent Evaporation Ponds (acres)		1,799	481	583	2,862
	67 percent Mitigation Areas (acres)		2,230	751	0	2,981
	Adjusted Drained Acres (acres)	54,000	59,940	64,567	57,676	236,183
	Iteration 5					
5	Flow Influent to Reuse (acres)	35,200	24,064	25,089	22,326	106,679
	Flow Effluent Reuse (AF/year)	9,504	6,497	6,774	6,028	28,803
	Average Flow Effluent Reuse (cfs)	13	9	9	8	40

Notes:
Mitigation areas calculated using mitigation ratios of 1.6 and 0.8 acre mitigation/acre evaporation pond for the northern and southern evaporation ponds, respectively (see Section 5)